ness and increases the patient's comfort, and a reasonable degree of reduction is often secured.

Carbuncle is benefited by moderate filtration and voltage. It has seemed to me that rather full dosage, 50-100 m.a. minutes, 100,000 K. V. is best. The benefit to furunculosis is less apparent, but possibly because we do not use full dosage.

Lymphoid tissue, as in lymphadenitis, enlarged tonsil, or in early Hodgkin's disease states, is susceptible to short wave therapy.

The response of mixed infection or tubercular adenitis is pleasing. If suppuration is pending it is hastened, and a small surgical vent gives recovery with minimum scar formation. But long standing cases with much fibrous and avascular tissue may be better dealt with by surgical removal. Large tonsils often atrophy in surprising fashion if the tissue is lymphoid and vascular, but prognosis must be guarded, especially in the small rough fibrotic type. Surgical removal should not be discouraged in any case ordinarily, but where surgery is feared, or contra-indicated radiotherapy is a resource, possibly quite satisfactory in one-third, fairly so in another one-third, and useless in the remaining one-third of our cases.

Hyperactive and adenomatous thyroids are a suitable field for radiotherapy, as has been ably presented to this body by W. I. Terry. As a guide in this work basal metabolism should be checked from time to time; for this purpose we use the smaller Sanborn apparatus, and make the tests in the office. The patient comes in the early morning without breakfast or marked exertion, and after a half-hour's rest reclining, the tests can be run in another half hour. If the metabolism is plus x-ray treatment is indicated, with caution as broken dosage, using 140-160,000 K. V. ½ mm. Cu. and 1 mm. Al, 150 m. a. minutes every five days for four doses, then rest and check up in two to three weeks by metabolism test. The above technique is merely a suggestion, to be varied as experience or the type of patient requires. The rapid abatement of nerve symptoms is often grateful to both physician and patient.

Enlarged or persistent thymus, the type causing juvenile asthma and bad operative risk, is very responsive to rather light dosage of x-ray, the voltage and filtration is medium, dosage 50-75 m. a. m. at weekly intervals until relief is positive.

Uterine fibroid, if it has a good vascular supply, can be reduced satisfactorily. I have treated such tumors reaching half way to the umbilicus, and of late larger ones reaching to the umbilicus have been reported. The high voltage ray is efficient; usually 2 fields, rt. and l. lower quadrant suffices, through a port 3 to 4 inches in diameter, 150 m. a. minutes, can be delivered every five days for four treatments using 160-180,000 K. V. full filtration, then rest until the next intermenstrual period and gauge further dosage by size of tumor and amount of last menstruation, warning the patient that menopause may be induced for a time, or possibly permanently, according to age of patient. If children are desired great care must be observed to localize the ray through a small part placed centrally, and remember that secondary radiation will deliver a 15 to 25 per cent dose to the ovary outside the direct field. I have not observed much discomfort attending this treatment, even the menopause induced appears to be peculiarly free from disagreeable symptoms. If treatment sets up pain, suspect a wrong diagnosis; pus tubes, and ovarian cysts are not suited to radiotherapy.

Uterine flooding, and metrorrhagia, if associated with subinvolution, or the fibroid type of uterus, is controlled permanently by adding x-ray to the other therapeutic measures, and shows at its best by promptly controlling the cases unrelieved by curettage.

Prostatic enlargement in selected cases responds to radiotherapy. Recent inflammatory deposits, and cancer inviting conditions probably are the best indications, and high voltage, full filtration and dosage are necessary.

Certain adverse effects of radiotherapy are to be avoided, or dealt with when unavoidable. These include dryness of the mouth, pharynx and larynx in treating face and cervical conditions, and this will often include altered taste. Dry bronchial cough will result when intensive radiation reaches the lungs. Lessened gastric secretion, nausea, and radiation sickness result when the rays include the upper abdomen. When large skin areas are treated, particularly on patients previously sensitized by x-ray, an unpleasant attack of radiation sickness may occur. The careful operator avoids these consequences when possible, and when unavoidable warns the patient without causing alarm.

It is urged that radiotherapy be given a place with other therapeutic measures in treating non-malignant conditions to which it is suited. It will often justify fully its selection by hastening and rendering more permanent the cure, which is the end we all seek.

GASTRIC AND DUODENAL ULCER

By JAMES A. MATTISON,* M. D.

(From the National Soldiers' Home Hospital, Los Angeles)

Not infrequently, patients suffering from abdominal symptoms have been told that they were suffering from gastric or duodenal ulcer, where subsequent careful examinations show that a mistake in diagnosis had been made for tabes dorsalis, cirrhosis of the liver, chronic appendicitis, Banti's disease, tuberculosis of the intestine, or ptosis of the kidney.

It is believed that too little consideration has been given to pre-operative and post-operative treatment. In pre-operative treatment, the possible etiological factors have been lost sight of too frequently. It is felt that we cannot emphasize too strongly the importance of an exhaustive search for foci of infection in the body, such as diseased tonsils, abscessed teeth, infected sinuses.

DISCUSSION *by Charles S. James, Los Angeles; C. P. Thomas, Los Angeles; Carl L. Hoag, San Francisco.*

PEPTIC ULCER is one of the most frequent benign lesions of the upper gastro-intestinal tract. It is of almost equal interest to the surgeon, the physician, the pathologist, and the physiologist.

*James A. Mattison (Soldiers' Home, Sawtelle, California), M. D. University of Michigan, F. A. C. S. Practice limited to surgery. Hospital connections: Veterans' Hospital, Soldiers' Home. Appointments: Chief surgeon, Veterans' Hospital, Sawtelle; Colonel M. O. R. C. Publications: Several articles in standard medical journals.

It was not until after 1893 that great progress was made by the pioneers in the surgical treatment of this condition.

The etiological factors concerned in the development of peptic ulcers are still more or less muted points. It is generally conceded, however, that an infection which has originated within the body is the prime factor to which is added the lowering of the local resistance to the action of the digestive fluids by means of some chemical or mechanical action.

The duodenal type of ulcer is characterized by a fairly regular group of symptoms, such as a discomfort, varying all the way from an unpleasant sensation, to a gnawing pain in the epigastrium, appearing from a half to three or four hours after meals, associated with gas and sour stomach. A part or all of the symptoms continue until the next meal or until food, liquid, or alkali is taken into the stomach. Food relief, alkali relief, periodicity of attacks, a history of long-standing stomach trouble, and night pains, are quite characteristic of this type of ulcer.

Vomiting is fairly rare in duodenal ulcer, likewise hematemesis and tarry stools. Physical examination in all patients reveals a greater or less degree of tenderness in the region of the right costal margin and extending along the descending portion of the duodenum.

The group of symptoms are repeated with marked uniformity each day for weeks or months, followed by a cessation of symptoms, during which time there is complete or almost complete absence of evidence of the disease. These cycles of attacks and intermission may continue for years. There is, however, usually a gradual increase in the severity with succeeding attacks, and sooner or later adhesions and other complications develop which alter motility and functions and thereby exaggerate the symptoms and modify the characteristic periodicity.

Gastric analysis should be made as a routine measure, but the findings vary so greatly that no definite conclusions can be arrived at from these findings alone. The finding of occult blood serves as confirmatory evidence. Radiological examination, in the hands of a skilled roentgenologist, who follows the routine of careful fluoroscopic examinations supplemented by a large series of plates, is an exceedingly important aid in diagnosis. Of greatest importance in the diagnosis, however, is the history of the case. Its frequency (four times as frequent as gastric ulcer), its latency, delayed pain after meals, and prompt relief following the intake of food, liquids or alkalis, are all important diagnostic points in duodenal ulcer. In making a differential diagnosis the two conditions which are most frequently confused with duodenal and gastric ulcers are chronic appendicitis and disease of the gall-bladder. Here again, an accurate history, including frequency and latency of attacks, relation of pain to meals, food and alkali relief, the type of digestive disturbance after the intake of certain articles of diet, and the radiological findings, will be of prime diagnostic importance.

Gastric Ulcer—Is also characterized by periodicity of attacks and definitely localized pain in the epigastrium after meals. The preponderance of gastric ulcer in males is three to one. There is a marked regularity in the time of onset of pain in a given patient. One-half to two hours usually lapses between the intake of food and the pain. As long as no adhesions have formed or no other complications have developed, relief of pain from the intake of food or alkalis is fairly constant, especially where the food is carefully selected and not taken in large quantities. The patient describes the pain as dull or gnawing in character, located in the epigastrium in the midline, or a little to the left of the midline, and often extending through to the back. In gastric ulcer the pain which comes on after meals gradually subsides before the next meal. In duodenal ulcer the pain continues until relieved by food, liquid or alkali.

Vomiting in gastric ulcer is not a frequent symptom. Hematemesis occurs in about 20 per cent of the cases. It must be remembered, however, that hematemesis may result from a number of other causes, such as enlargement of the spleen, in Banti's disease, cirrhosis of the liver, from dilated veins in the esophagus or in the stomach, and from certain toxic conditions resulting from disease of the gall-bladder, appendicitis, and pancreas. Pain and discomfort in gastric ulcer comes on earlier after meals than in duodenal ulcer; does not continue so constantly until the next meal; may let up for a time to begin again before the following meal. Fear of food pain is more often noted in gastric ulcer. Radiological findings are of great corroborative value in supplementing the history and other diagnostic findings. An x-ray diagnosis is possible in 95 per cent of the patients. Gastric ulcer and duodenal ulcer call for both careful fluoroscopic study and a large series of plates, in order to be of greatest value. A careful study of the gastric contents should be made in every instance, even though the findings vary greatly. Deductions must be made from the study of each individual patient.

In arriving at a differential diagnosis, gastric neurosis must be borne in mind. In the latter condition the gastric attacks are more or less independent of the diet. In gastric neurosis there is a noticeable irregularity of intervals between attacks, and certain definite nervous manifestations are usually apparent. In gastric, as in duodenal ulcer, symptoms arising from extra gastric diseases must be kept in mind. Diseases of the gall-bladder, appendix and pancreas frequently give rise to a hypermotility, gastric spasm and pyloric spasm, which produce symptoms closely simulating those of peptic ulcer.

Not infrequently, patients suffering from abdominal symptoms have been told that they were suffering from gastric or duodenal ulcer, where subsequent careful examinations show that a mistake in diagnosis had been made for tabes dorsalis, cirrhosis of the liver, chronic appendicitis, Banti's disease, tuberculosis of the intestine, or ptosis of the kidney.

Treatment of chronic peptic ulcer, where repeated and prolonged medical treatment has failed, is definitely surgical. The subject of surgical treatment of peptic ulcer is one which has received more mature thought than that of any other upper abdominal disease. There have been those who have advo-

cated excision of the ulcer alone. Others who have advocated gastro-enterostomy alone; and still others who have contended that a combination of excision and gastro-enterostomy was the sane and most logical treatment. At the present time the pendulum has swung further toward the radical treatment, including radical resection, followed by an anastomosis of the Polya or Polya-Balfour type. The radical treatment has been particularly widely advocated and practiced on the continent and in Great Britain. The very radical treatment, however, has not met with the same approval in this country, and has not been so widely used. It is universally conceded that gastric or duodenal ulcer requiring surgical treatment should be excised, where practicable, and in the great majority of cases followed by a posterior gastro-enterostomy. The removal of the ulcer-bearing area in gastric ulcer is particularly indicated, especially in the face of the fact that carcinoma is prone to develop in the base or edge of such lesions.

It is believed that too little consideration has been given to pre-operative and post-operative treatment. In pre-operative treatment the possible etiological factors have been lost sight of too frequently. It is felt that we cannot emphasize too strongly the importance of an exhaustive search for foci of infection in the body, such as diseased tonsils, abscessed teeth, infected sinuses. In the past too little attention has been paid to post-operative dietary or therapeutic management. In every instance where operative treatment has been carried out, an intelligent regime of diet should follow, and the patient's habits carefully regulated. In other words, the patient becames a medical case immediately following surgical treatment.

Balfour summarizes the most important causes of disappointing results from operations, as follows: (1) a young patient; (2) a short and a typical history; (3) the constitutional inferiority type of individual; (4) a small ulcer without obstructive symptoms; (5) development of pathologic conditions, extrinsic to the stomach, giving rise to reflex gastric symptoms; (6) bad habits of living; and (7) unremoved foci of infection.

Imperfect results may also depend on errors of judgment or technique in connection with the operation itself. For example, failure to remove the ulcer when removal is indicated; too short loop to the meso colon; too small an opening or one not properly placed; failure to close the meso colon snugly around the stomach at a sufficient distance from the gastro-enterostomy; twists in the anastomotic loop; and unnecessary trauma during operation.

DISCUSSION

CHARLES S. JAMES, M. D. (2007 Wilshire Boulevard, Los Angeles)—It was my good fortune last November to be present at the meeting of the Santa Monica branch of the Los Angeles County Medical Society and to hear Colonel Mattison present the subject of "Gastric and Duodenal Ulcer." This discussion was so comprehensively and accurately in accord with the consensus of modern opinion that there is but little to be added to or taken from it.

Until the etiology of gastric ulcer is more definitely and exhaustively known, our views referable to the treatment and management of this lesion will continue to rest largely upon clinical observation; therefore, this concise review as presented by Colonel Mattison, with his broad clinical experience, is of particular timely value.

In my opinion, the surgeon too ofttimes minimizes the value of the physician's services in the treatment of gastric ulcer. Every case of gastric ulcer should be individualized and in general viewed primarily as a medical case, with the possibility of there having developed or developing a surgical phase. After the surgical indication has been met, the case should again be viewed as a medical one, and instead of being discharged in a short period of time as cured, should continue under competent medical observation, not for a few weeks or a few months, but for an extended, indefinite period of time.

We must realize that probably none of the present-day gastric operative procedures corrects the underlying etiological factor, or factors, as the case may be.

I am heartily in accord with the essayist's view referable to the pre-operative, operative, and post-operative periods of management, but I think the importance of the post-operative treatment, management, and observation by the physician should be more especially stressed.

C. P. THOMAS, M. D. (Consolidated Building, Los Angeles)—His most excellent paper on gastric and duodenal ulcer is one of the best I have ever read on this subject, and is so complete it leaves but very little to be said in the way of discussion.

I think it is well to take into consideration the condition of the teeth and tonsils, also pyloric spasm due to chronic appendicitis or gall-bladder, as causative factors. Duodenal ulcer pain comes on from one and a half to four hours after food intake, and is generally relieved by milk, alkalis or additional food, while gastric ulcer pain usually comes on immediately after eating and is relieved by vomiting. Gastric analysis, as a means of diagnosis, has usually been disappointing to me. The x-ray sometimes is of diagnostic assistance, but also often very disappointing.

The doctor wisely says that cirrhosis of the liver, chronic appendicitis, gall-bladder disease, etc., are often mistaken for ulcer, and I would add that ulcer of the stomach or duodenum is even more often called gastritis, gastralgia, or neuralgia of the stomach.

Medical treatment of ulcer of the stomach or duodenum should be thoroughly tried when the pain is bearable, the ulcer not actually bleeding or when its healing has caused stenosis, but when either of those conditions are present the best results will be obtained from properly executed surgery.

Radical removal of non-malignant ulcer, in the hands of our very best surgeons, is still a dangerous procedure and certainly not one to be generally advised. The cautery treatment, when the ulcer can be approached, is safer, just as efficient, and is a better means of preventing malignancy.

Gastro-enterostomy is still a pretty definitely mechanical problem, but when it is correctly done is still the safest and best treatment and about the only one when the ulcer has been sufficiently near the pylorus to disturb its proper function. I am quite convinced that those surgeons who are severe in their criticism of this operation are so because of their inability to do it properly.

CARL HOAG, M. D. (177 Post Street, San Francisco)—This concise and well-thought-out paper leaves little to be added.

I agree with the author that the history and the laboratory and the screen findings give us the most important factors in establishing a diagnosis. Little is learned by the analysis of the contents of the stomach; in fact, so little that it is hardly advisable to subject the patient to this ordeal, except in selected cases. The x-ray gives us the information we wish with much less discomfort.

Medical treatment, which usually comprises some form of Sippy diet, is, in itself, an important diagnostic measure, for those patients who are not relieved usually are found later to have some complicating lesion or else no ulcer at all.

Just as we must individualize our patients in recommending an operation, so it is essential to choose the proper operative procedure when the abdomen is open.

Gastro-enterostomy gives excellent results where ob-

struction is present, and it does it with a lower mortality rate than with any other type of operation which could be employed. Unfortunately, it alone does not cure large, acute, bleeding ulcers. The simplest method of destroying an ulcer is with the Balfour cautery. This is a less formidable operation and gives less distortion than excision. I think that this procedure still has a well-earned place in our surgery of the stomach and duodenum, in spite of the recent tendency toward excision with some type of pyloroplasty. The advantage of the latter procedure lies chiefly in retaining the normal movements of the stomach contents through the duodenum where they are modified before coming in contact with the jejenum. It enables us also to explore the inner surface of the duodenum.

My own experience leads me to favor the Finney operation, because it results in a better reconstruction and it gives a better function than any other type of pyloroplasty.

I am in accord with the author's views, that the Billroth and Mayo-Polya operations should only be done in carefully selected cases, usually as a secondary procedure, because of the increased mortality rate even in the hands of the best surgeons.

I am glad that the author emphasizes the post-operative car, for however excellent the operative treatment, all of these patients have a damaged gastro-intestinal mechanism, and they should be supervised for a long period of time.

DOCTOR MATTISON (closing)—The question of whether or not an excision of either a gastric or duodenal ulcer is advisable can only be determined after the abdomen is opened and the conditions present determined. It frequently happens that there is a definite indication for the excision where it is impossible to excise the ulcer because of complications which have arisen, such as dense adhesions to the pancreas, where an attempt at excision of the ulcer would unnecessarily increase the risk to life out of proportion to the benefits derived.

Clinical results following gastro-enterostomy, especially in the case of duodenal ulcer, have been so universally satisfactory that it is not believed that a radical excision of the pyloric end of the stomach is justified as a routine, especially in the face of the fact that the more conservative operation, posterior gastro-enterostomy, has given very satisfactory results in approximately 90 per cent of all cases. Clinical experience has also shown that there is a recurrence of the ulcer, usually in the form of a gastro-jejunal ulcer, requiring subsequent surgical treatment in approximately 2 per cent of all cases of gastro-enterostomy. In such cases, however, the indication, generally, is to cut off the gastro-enterostomy, do a resection of the pyloric end of the stomach, which includes the acid-bearing cells of the stomach, and do an end-to-side gastro-enterostomy.

In cases of crater ulcer, in the lesser curvature of the stomach, gastro-enterostomy has been very unsatisfactory, and clinical experience has shown that it is in this type of gastric ulcer that the radical operation of resection of the pyloric end of the stomach is more frequently indicated.

What is meant by adult-infantalism? The condition and conduct of an individual who, having reached maturity of physical development, remains infantile in his responses to the demands and obligations of life. One may be infantile on the physical, the intellectual, or on the affective side, but the term ordinarily is limited to lack of development in the field of the emotions.—Joseph Collins (Harper's).

To a friend just married, Abraham Lincoln wrote: "My old father used to have a saying that if you make a bad bargain, hug it all the tighter; and it occurs to me that if the bargain you have just closed can possibly be called a bad one, it is certainly the most pleasant one for applying that maxim to which my fancy can by any effort picture."

SIGNIFICANCE OF GROWTH DEVIATIONS IN CHILDREN

By C. L. LOWMAN,* M. D., *Los Angeles*

It is important to recognize that certain faults in children of a certain type may lead to certain disturbances of function and pathological changes at a later date.

It is only by projecting our minds ahead twenty years or so to the decade when the body mechanism meets the crisis of life that we can fully appreciate that simple pornated ankle and imperfectly forming arch of the child may result in fatigue, cramps and sciatic neuritis of a later period.

Let us look well into the future, then, when we address our efforts to the care of skeletal faults in children.

DISCUSSION *by Guy L. Bliss, Long Beach; Clifford Sweet, Oakland; Robert Ewart Ramsay, Pasadena.*

TO appreciate the true significance of growth divergencies in children it is quite essential to have in mind two things, namely: First, whether any given deviation is due to actual pathological causes, or is a pure growth fault with associated functional disorder; and secondly, the factors related to the type of individual and the correlative tendencies and characteristics involved.

In order to accomplish victories similar to those over diphtheria and scarlet fever in the line of improving a child's future physical possibilities, one must approach the matter as much as possible from an anthropological viewpoint, rather than a pathological. Physicians are trained so much to observe the unusual in their study of the human body that they are not sufficiently familiar with the physiological differences and peculiarities of the several different types of the ordinary average individuals whose disturbances of health rarely lead them to require a physician's attention.

It is important to recognize that certain faults in children of a certain type may lead to certain disturbances of function and pathological changes at a later date. For instance, a certain type of fat child with knock-knees, lordosis and flat-feet is so definitely classified anthropologically that the child's future life will, very probably, be influenced by certain prominent endocrine disturbances and definite mental and physical characteristics.

So true is this that the physician can predict with reasonable certainty what general diseases and disturbances of metabolism are likely to take place and with this knowledge he can take appropriate steps toward prevention.

The physician sees a stream of patients with arthritic, neuritic, bursitic and myositic symptoms related very definitely to faults in skeletal alignment and the incident physical overload of the muscular and neural systems. Round shoulders, spinal kyphosis, flat chest and relaxed abdomen, picture to us at once, not only a neuro-muscular overload, but the slackened diaphragm, narrowed chest depth and visceroptosis, incident to them, and point as well to organic in-

*Charles LeRoy Lowman (2417 S. Hope Street, Los Angeles), M. D. University of California (Southern Branch), 1907. Practice limited to Orthopedic Surgery. Hospital connections: Orthopedic Hospital School. Appointments: Chief of staff, Orthopedic Hospital; Lecturer on Corrective Physical Education, University of Southern California and Pomona College. Publications: Numerous since 1915, including discourses are: Deflection of Energy, Applied Anthropology, Use and Abuse of Arch Supporters, Delayed Development of the Tarsus, A Study in Gaits, etc.